

### **In the Claims**

Claims 1 – 18 (Cancelled)

19. (New) An exploration device to monitor the penetration of an instrument in an anatomic structure comprising:

at least two electrodes;

a source of voltage supplying the at least two electrodes;

a means for measuring impedance between the electrodes;

a means of angular location formed by at least one electrode punctually coinciding with a peripheral surface of the penetration instrument, the coinciding surface of the electrode having a position set off from a longitudinal axis the instrument; and

means for detecting a position of the at least one electrode.

20. (New) The exploration device according to claim 19, wherein the electrode punctually coincides with a lateral surface of the penetration instrument.

21. (New) The exploration device according to claim 19, wherein the electrode punctually coincides with a peripheral surface of a distal end portion of the penetration instrument.

22. (New) The exploration device according to claim 19, wherein the coinciding electrode is rotatably movable.

23. (New) The exploration device according to claim 22, wherein the coinciding electrode is driven at a speed of rotation so that the electrode sweeps at least 360 degrees per level of drilling of the penetration instrument in the bone structure.

24. (New) The exploration device according to claim 19, wherein the electrodes are a plurality of coinciding angularly spaced fixed electrodes and means for measuring impedance delivers a signal corresponding to each of the electrodes.

25. (New) The exploration device according to claim 24, wherein the electrodes are longitudinally and angularly spaced punctual contacts.

26. (New) The exploration device according to claim 24, wherein the electrodes are formed of longitudinal strips.

27. (New) The exploration device according to claim 24, wherein the electrodes are distributed around the longitudinal axis of the penetration instrument.

28. (New) The exploration device according to claim 24, wherein the electrodes are symmetrically arranged with respect to the longitudinal axis of the penetration instrument.

29. (New) The exploration device according to claim 24, wherein the electrodes are conducting rods of circular, semi-annular, rectangular and/or triangular section.

30. (New) The exploration device according to claim 24, wherein the electrodes are formed by eccentric conducting rods.

31. (New) The exploration device according to claim 19, further comprising at least one electrode arranged at a distal end of the penetration instrument.

32. (New) The exploration device according to claim 31, wherein two electrodes are arranged at the distal end of the penetration instrument, the electrodes consisting of conducting rods of substantially concentric circular section.

33. (New) The exploration device according to claim 19, wherein the means for detecting comprises a visual marking on a handle of the exploration device.

34. (New) The exploration device according to claim 19, further comprising a handle forming the means for detecting.

35. (New) The exploration device according to claim 19, further comprising a central channel for passage of an additional instruments.